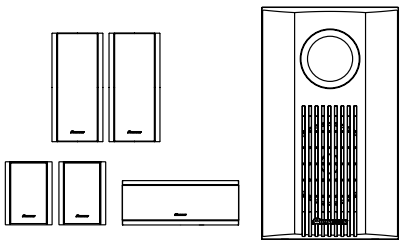
Pioneer sound.vision.soul

Service Manual



S-FCRW240L-S

ORDER NO.
RRV2923

HOME THEATER LOUDSPEAKER SYSTEM

S-FCRW240L-S

POWERED SUBWOOFER

S-W240L-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Porew Requirement	REMARKS
S-FCRW240L-S	KUXJI	AC120V	Speaker System
S-W240L-S	KUXJI/CA	AC120V	Powered Subwoofer of S-FCRW240L-S

For details, refer to "Important symbols for good services".

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ⓒ**PIONEER CORPORATION 2004**

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SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

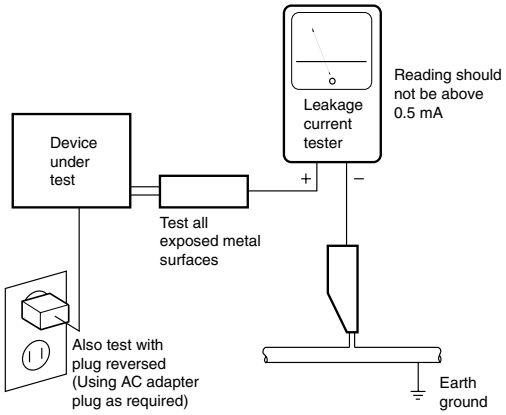
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.


Reading should not be above 0.5 mA
Leakage current tester
Device under test
+
–
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

■ S-FCRW240L-S Speaker System

SATELLITE SPEAKER (Front)	SMW1815
SATELLITE SPEAKER (Center)	SMW1816
SATELLITE SPEAKER (Rear)	SMW1817
POWERED SUBWOOFER	S-W240L-S

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1. SPECIFICATIONS

FRONT SPEAKERS

Enclosure ..... Closed box type
System ..... 2-way magnetically shielded loudspeaker

Drive Units

Tweeter ..... 1" ceramic type
Midrange ..... 3" cone magnetically shielded
Nominal Impedance ..... 8 ohm
Frequency Range ..... 100-20k Hz
Sensitivity spl @ 1m/ 2.83 V ..... 85 dB
Maximum Input Power ..... 100 W
External Dimensions ..... 4 1/2" x 9 5/8" x 6 5/16" WXHXD
Weight ..... 3.3 lbs

CENTER SPEAKER

Enclosure ..... Closed box type
System ..... 1-way magnetically shielded loudspeaker

Drive Units

Fullrange ..... 3" cone magnetically shielded
Nominal Impedance ..... 8 ohm
Frequency Range ..... 100-20k Hz
Sensitivity spl @ 1m/ 2.83 V 85dB
Maximum Input Power ..... 100 W
External Dimensions ..... 11 7/8" x 4 1/2" x 3 1/8" WXHXD
Weight ..... 1.9 lbs

REAR SPEAKER

Enclosure ..... Closed box type
System ..... 1-way loudspeaker

Drive Units

Fullrange ..... 3" cone
Nominal Impedance ..... 8 ohm
Frequency Range ..... 100-20k Hz
Sensitivity spl @ 1m/ 2.83 V 85dB
Maximum Input Power ..... 100 W
External Dimensions ..... 4 1/2" x 6 1/8" x 3 1/8" WXHXD
Weight ..... 1.2 lbs

POWERED SUBWOOFER

Enclosure ..... Floor standing bass-reflex type.

Speaker ..... 20 cm (8 inch)

Power Amplifier ..... Continuous Average Power Output is 100 Watts* min, at 28 ohms from 20 Hertz to 200 Hertz with no more than 1%** total harmonic distortion.

Input ..... 100 mV / 18 kΩ (at 60 Hz)
(Sensitivity at specified frequency/impedance)
Line level input(RCA - jack)

Crossover Frequency ..... 150 Hz

External Dimensions ..... 8 3/8" x 14 3/16" x 15 7/8" WXHXD

Weight ..... 17.8 lbs

Power Requirements ..... 120 VAC, 60 Hz

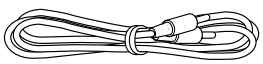
Power Consumption ..... 64 W 130 VA

Note: *Specifications and design subject to possible modification without notice due to improvements.*

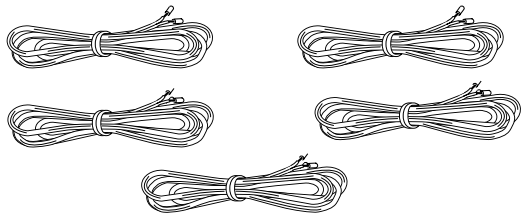
* *Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers.*
** *Measured by Audio Spectrum Analyzer.*

● Accessories

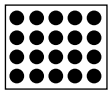
• RCA cable
(SDE1032)



• Speaker wires ×3
(SDS1158 : 5m with red colored marker)
(SDS1159 : 5m with white colored marker)
(SDS1160 : 5m with green colored marker)
(SDS1161 : 10m with blue colored marker)
(SDS1162 : 10m with gray colored marker)



• Non skid pads



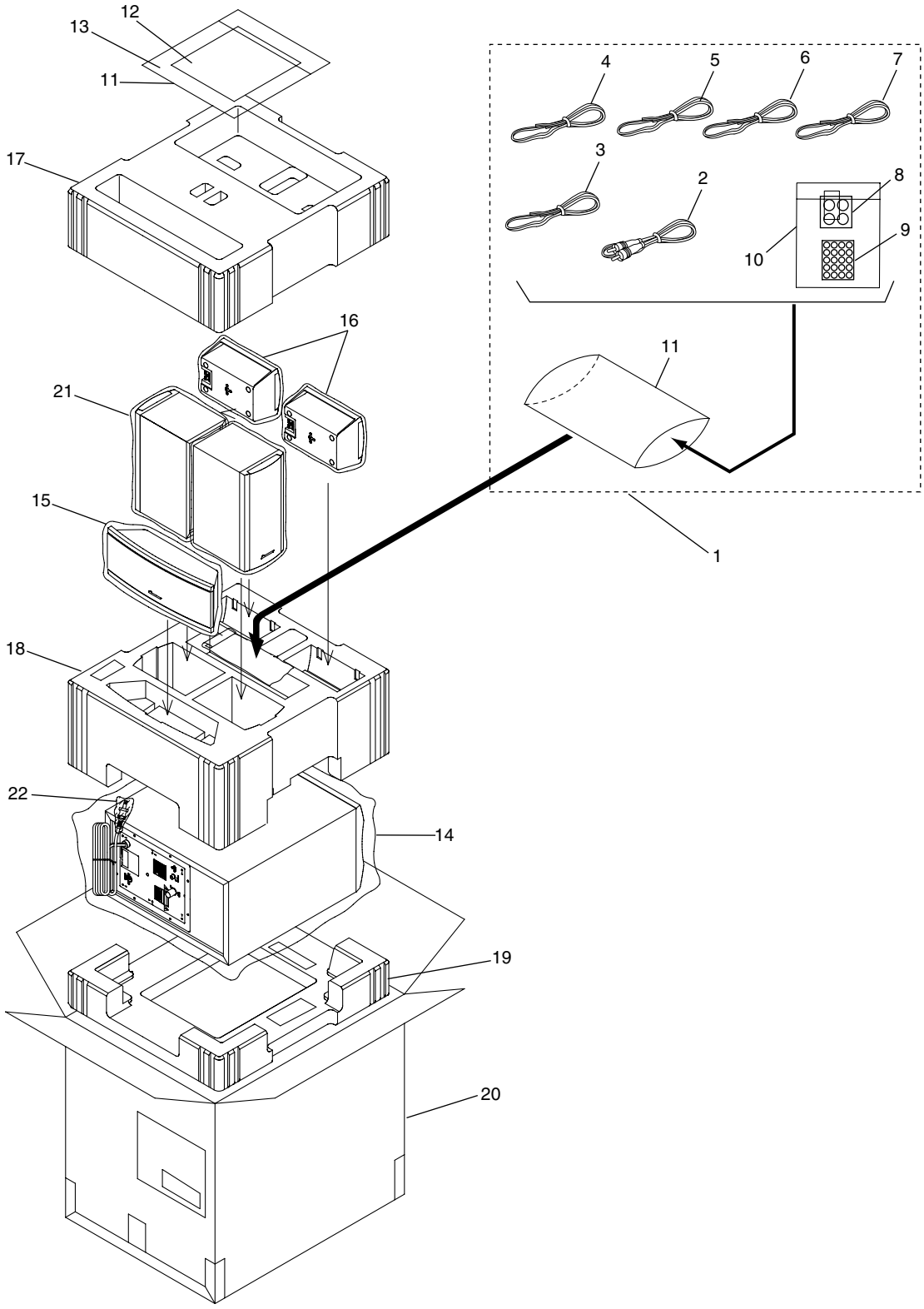
(SEC1635)
(for Satellite)

(SEC1563)
(for Subwoofer)

2. EXPLODED VIEWS AND PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *Screws adjacent to ▼ mark on product are used for disassembly.*
● *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

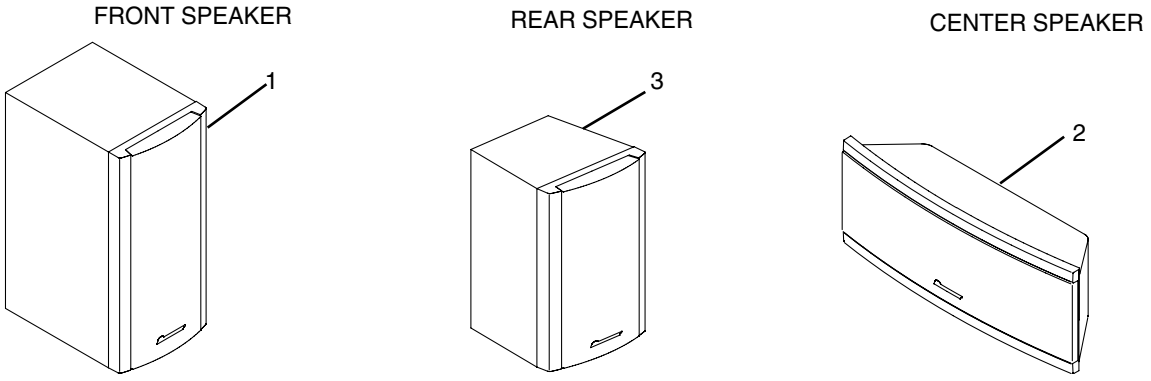
2.1 PACKING



PACKING parts List

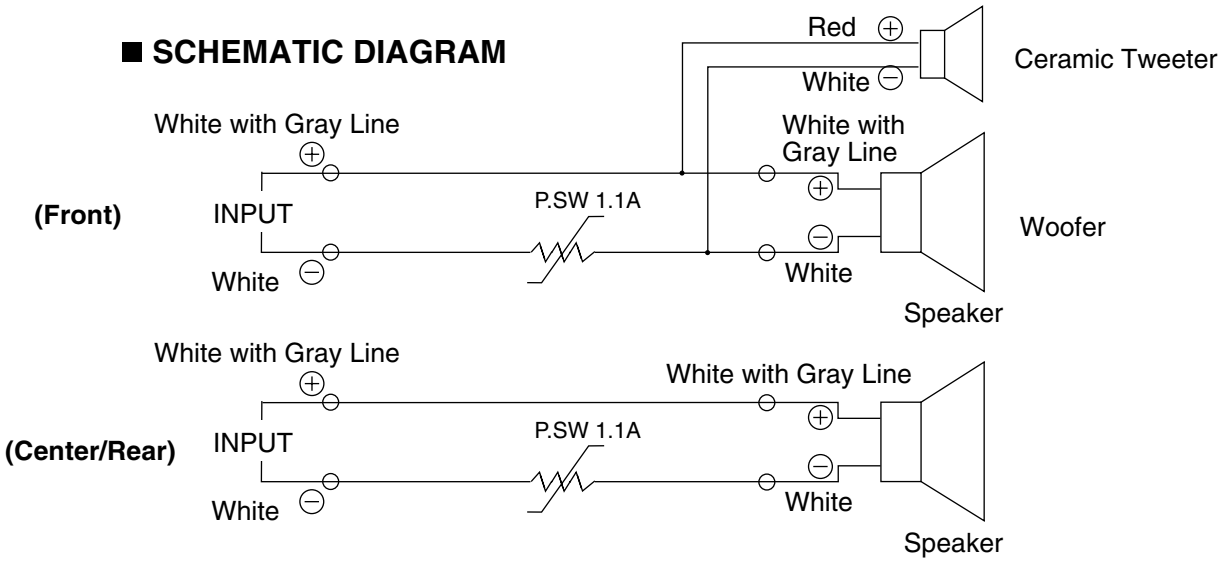
Mark	No.	Description	Part No.
NSP	1	Accessories Set	SME3464
	2	RCA Cable	SDE1032
	3	Speaker Wire (5m with red colored marker for Front right)	SDS1158
	4	Speaker Wire (5m with white colored marker for Front left)	SDS1159
	5	Speaker Wire (5m with green colored marker for Front center)	SDS1160
	6	Speaker Wire (10m with blue colored marker for Rear left)	SDS1161
	7	Speaker Wire (10m with gray colored marker for Rear right)	SDS1162
	8	Non Skid Pad (for Subwoofer)	SEC1563
	9	Non Skid Pad (for Satellite SP)	SEC1635
	10	Polyethylene Bag S0	SHL1343
	11	Protection Sheet S3	SHC1806
	12	Operating Instructions (English)	SRB1333
NSP	13	Operating Instructions Assy	SME3465
	14	Protection Sheet S6	SHC1809
	15	Protection Sheet S2	SHC1807
	16	Protection Sheet S2	SHC1808
	17	Top Protector	SHA2429
	18	Middle Protector	SHA2430
	19	Bottom Protector	SHA2410
	20	Packing Case	SHG2546
	21	Protection Sheet S3	SHC1811
	22	Protection Sheet S1	SHC1802

2.2 SATELLITE SPEAKER(Front, Center, Rear)



Note : There is no service part in the satellite speakers.

■ SCHEMATIC DIAGRAM



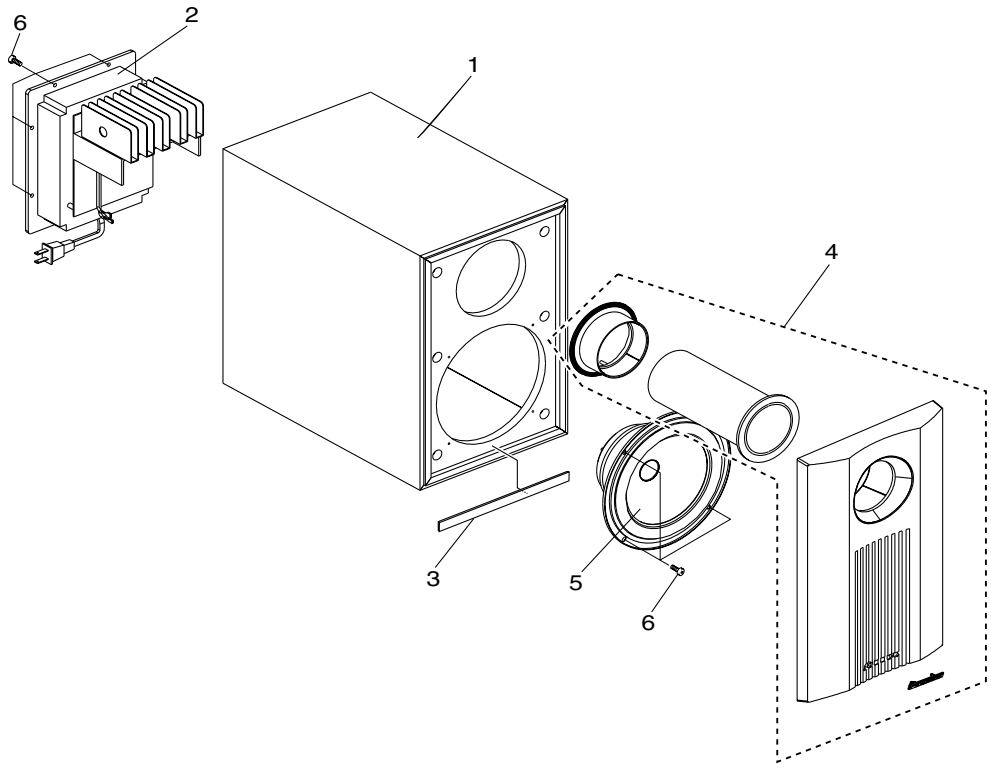
P.SW

P.SW has extreme positive resistance-temperature characteristics. (Less than 0.3W at the normal temperature).
If an abnormal current flows to P.SW due to an excessive input or unusual signal, P.SW heats up and the resistance rapidly increases. With this function, the speakers are protected from excessive input or unusual signal.
The resistance value increases even when using a soldering iron for repairing, so allow it to cool before using.

SATELLITE SPEAKER parts List

Mark	No.	Description	Part No.
	1	Satellite Front Assy	SMW1815
	2	Satellite Center Assy	SMW1816
	3	Satellite Rear Assy	SMW1817

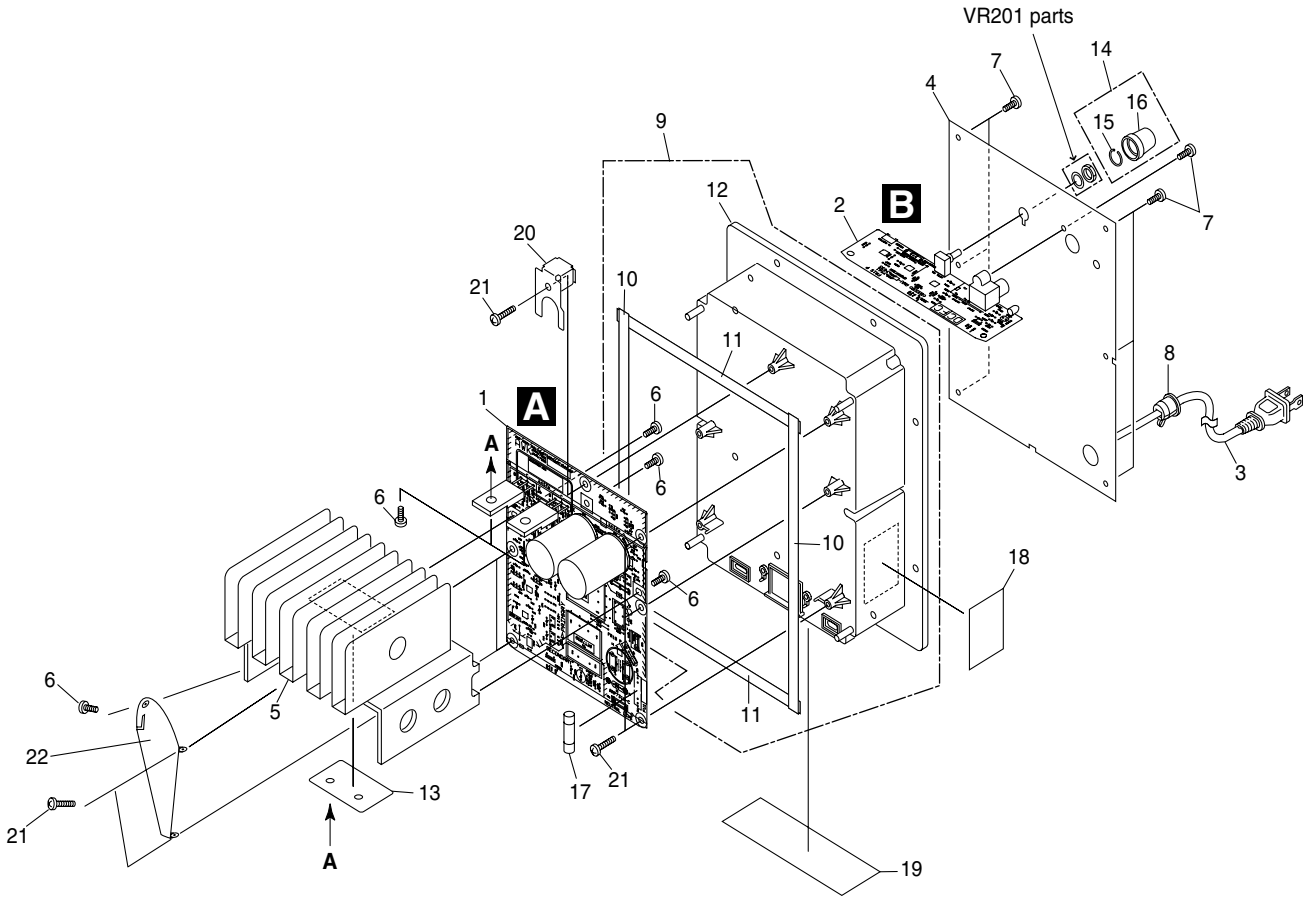
2.3 POWERED SUBWOOFER



POWERED SUBWOOFER parts List

Mark	No.	Description	Part No.
NSP	1	Cabinet	SMM1995
NSP	2	Amplifier Assy	HTP-A3
	3	Gasket	SEC1629
	4	Cosmetic Baffle Assy	SXB1464
	5	Speaker	T18LU90-51P
	6	Screw	BYC40P180FZB

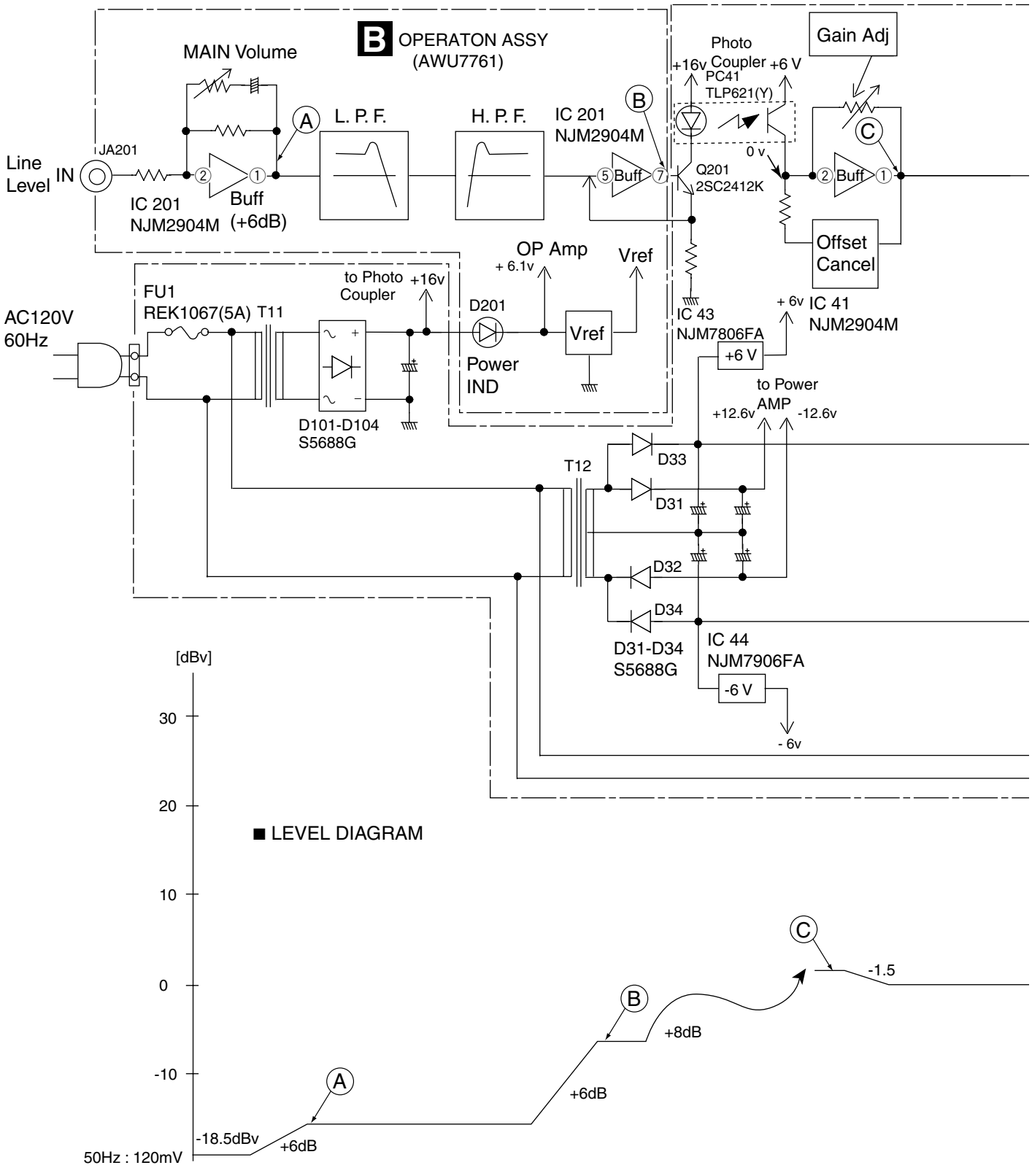
2.4 POWER AMP SECTION



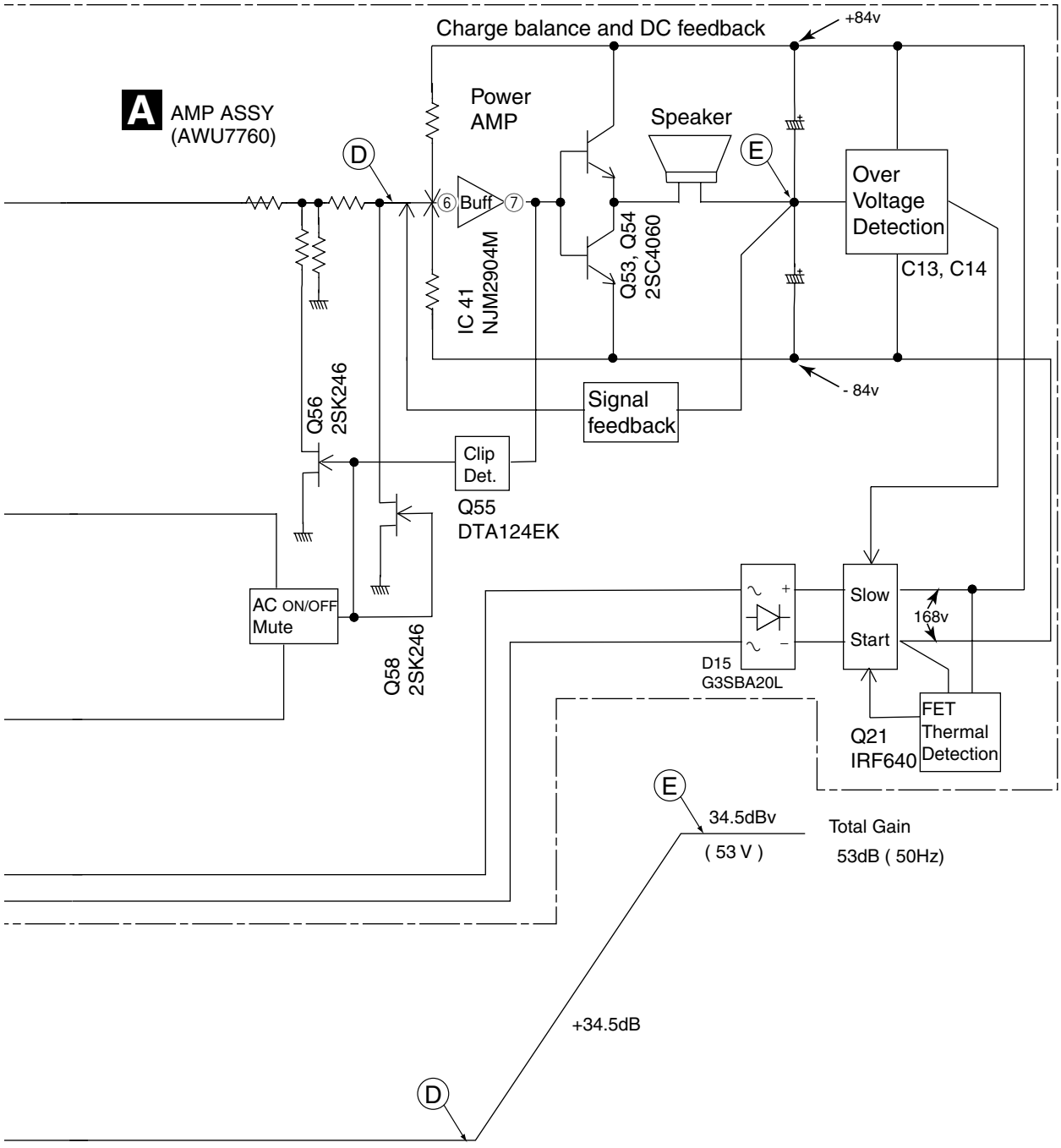
POWER AMP SECTION parts List

Mark	No.	Description	Part No.
	1	AMP ASSY	AWU7760
	2	OPERATION ASSY	AWU7761
⚠	3	AC Power Cord	PDG1064
	4	Operation Panel	ANC8292
NSP	5	Heat Sink	ANH7117
	6	Screw	ABA1052
	7	Screw	BPZ30P080FZK
	8	Cord Stopper	CM-22C
	9	Rear Case Assy	AXG7085
	10	Air Packing L	AEB7172
	11	Air Packing S	AEB7174
	12	Rear Case	AMC7039
	13	Mica Sheet	AEE7033
	14	Vol Knob Assy	PXA1621
NSP	15	Vol Knob	PAC1951
NSP	16	Spring	PBH1229
⚠	17	Fuse (FU1) 5A	REK1067
	18	Fuse Caution Label	ARW7083
	19	ICP 65 Label	ARW7084
	20	PBS Holder	ANG7329
	21	Screw	IPZ30P120FMC
	22	HS Holder	ANG7397

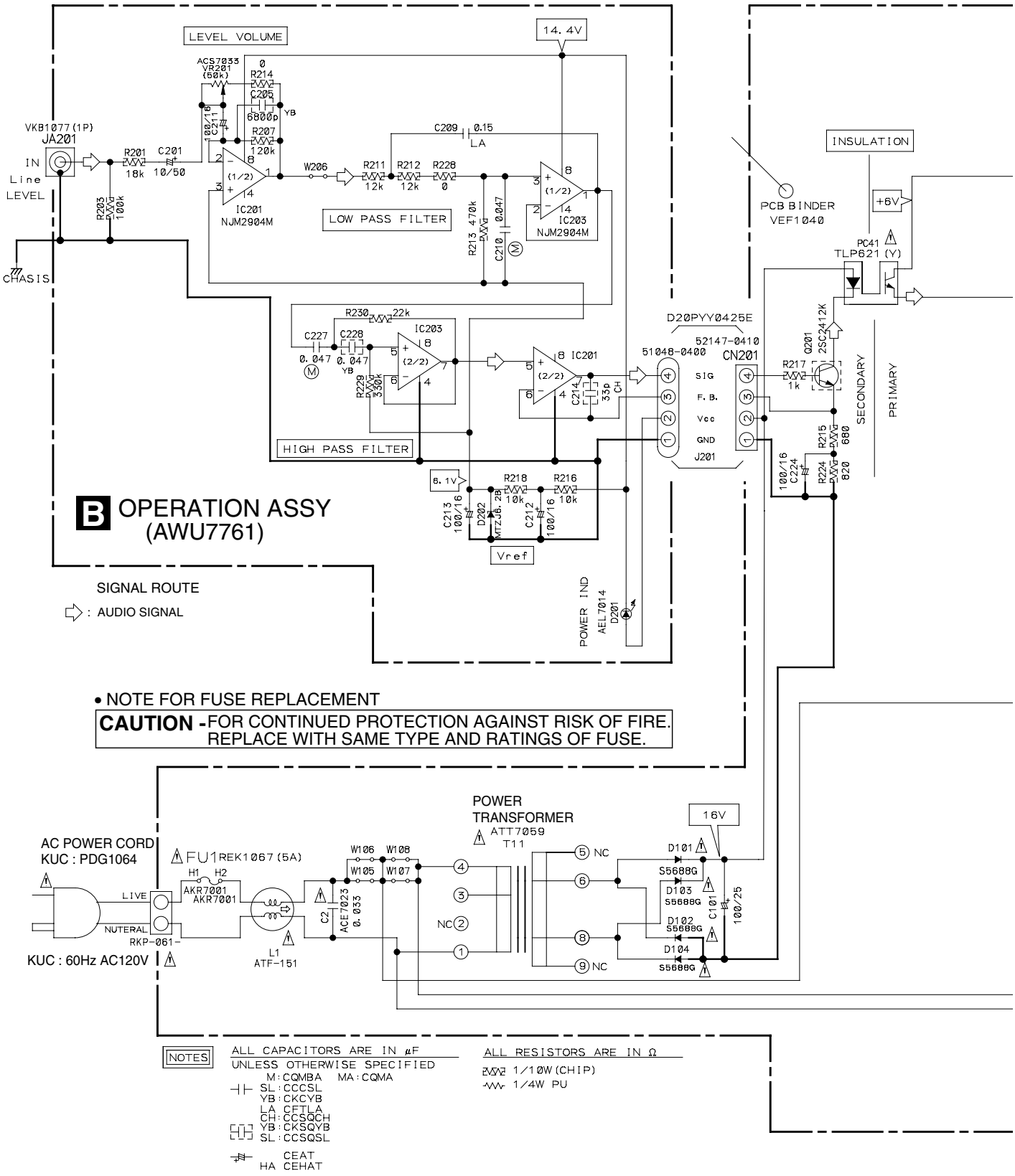
3. SCHEMATIC DIAGRAM
3.1 OVERALL BLOCK DIAGRAM



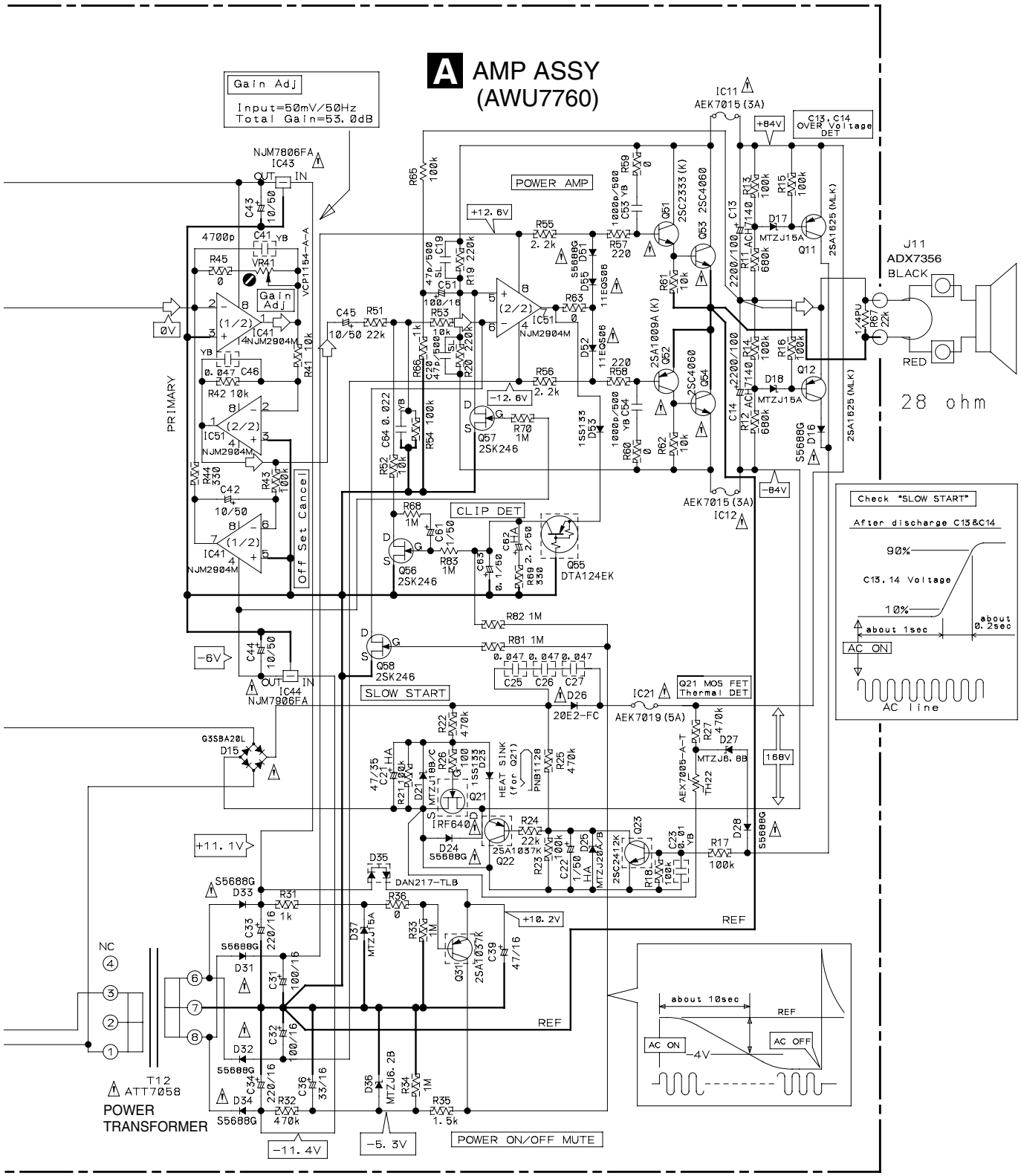
■ LEVEL DIAGRAM


A
AMP ASSY
(AWU7760)
Charge balance and DC feedback
+84v
Power
AMP
Speaker
D
E
6 Buff 7
IC 41
NJM2904M
Q53, Q54
2SC4060
Over
Voltage
Detection
C13, C14
- 84v
Signal
feedback
Q56
2SK246
Clip
Det.
Q55
DTA124EK
AC ON/OFF
Mute
Q58
2SK246
Slow
Start
168v
D15
G3SBA20L
Q21
IRF640
FET
Thermal
Detection
E
34.5dBv
(53 V)
Total Gain
53dB (50Hz)
+34.5dB
D

3.2 AMP and OPERATION ASSYS



NOTES: • When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
• The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
• ⬭ : The power supply is shown with the marked box.

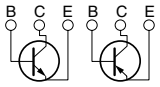
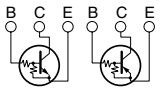
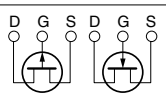
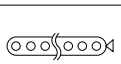
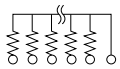


CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 491005 FOR IC21, 491003 FOR IC11, IC12 MFD. BY LITTELFUSE INC.

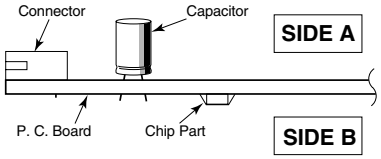
4. PCB CONNECTION DIAGRAM

NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

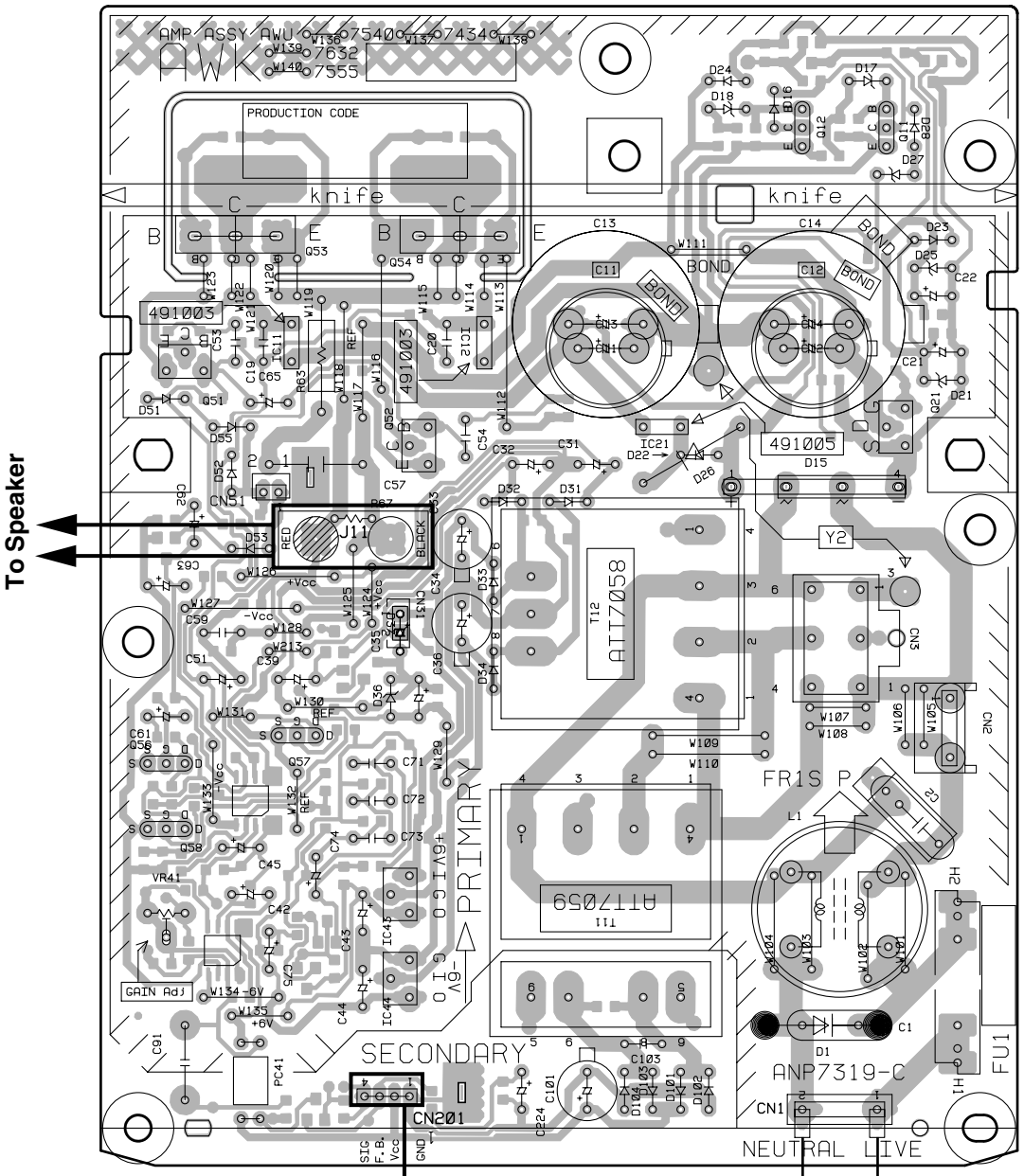
3. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. Viewpoint of PCB diagrams



4.1 AMP and OPERATION ASSYS

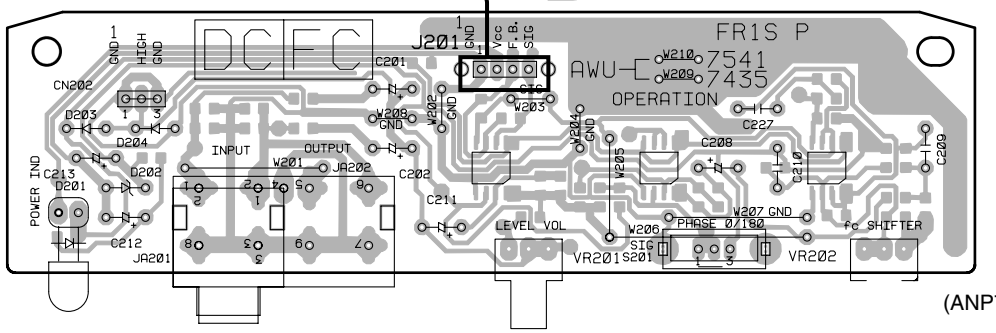
SIDE A **SIDE A**

A AMP ASSY



(ANP7319-C)

B OPERATION ASSY



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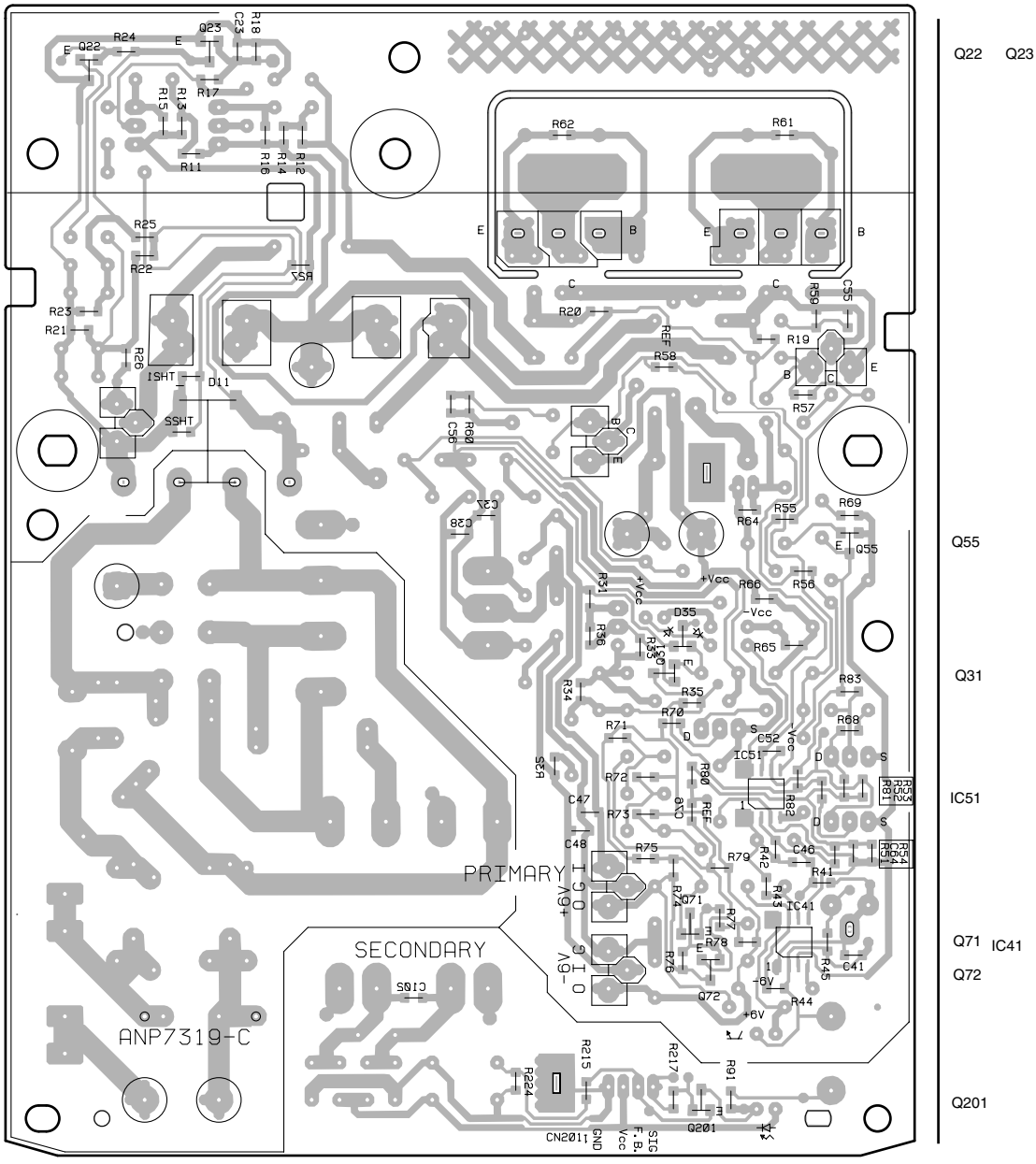
A B **A B**

SIDE B

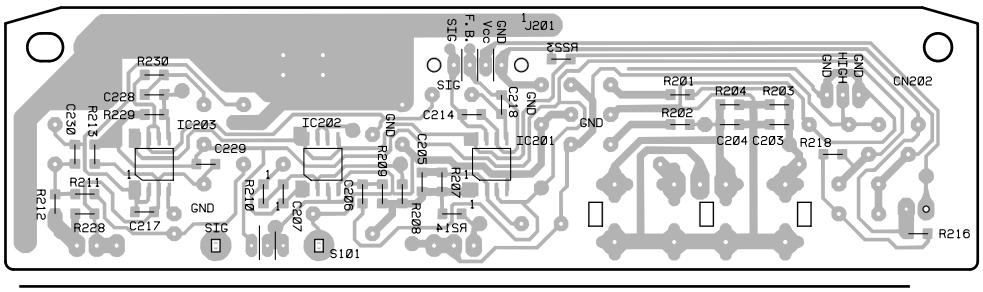
SIDE B

A AMP ASSY



(ANP7319-C)

B OPERATION ASSY



(ANP7319-C)

A B

A B

5. PCB PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω	→ *56 x 10[1]* →	*561*	*RD1/4PU 5 6 1 J*
47k Ω	→ *47 x 10[3]* →	*473*	*RD1/4PU 4 7 3 J*
0.5 Ω	→ *R50*		*RN2H R 5 0 K*
1 Ω	→ *1R0*		*RS1P 1 R 0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω	→ *562 x 10[1]* →	*5621*	*RN1/4PC 5 6 2 1 F*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
NSP	1	..SUB WOOFER AMP	AWK7722
	2	..AMP ASSY	AWU7760
	2	..OPERATION ASSY	AWU7761

A AMP ASSY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC41, IC51		NJM2904M
⚠	IC43		NJM7806FA
⚠	IC44		NJM7906FA
⚠	Q52		2SA1009A
	Q22, Q31		2SA1037K
	Q11, Q12		2SA1625
⚠	Q51		2SC2333
	Q201, Q23		2SC2412K
⚠	Q53, Q54		2SC4060
	Q56		2SK246
⚠	Q57		2SK246
	Q58		2SK246
	Q55		DTA124EK
⚠	Q21		IRF640
⚠	D52, D55		11EQS06
	D23, D53		1SS133
⚠	D26		20E2-FC
	D35		DAN217
⚠	D15		G3SBA20L
	D17, D18, D37		MTZJ15A
⚠	D21		MTZJ18B
	D25		MTZJ20A
	D36		MTZJ6.2B
	D27		MTZJ6.8B
⚠	D101-D104, D16, D24, D28		S5688G
⚠	D31-D34, D51		S5688
⚠	TH22		AEX7005
⚠	PC41		TLP621

COILS AND FILTERS

Mark	No.	Description	Part No.
⚠	L1	LINE FILTER	ATF-151

TRANSFORMERS

Mark	No.	Description	Part No.
⚠	T12		ATT7058
⚠	T11		ATT7059

CAPACITORS

Mark	No.	Description	Part No.
⚠	C2 (0.033/250)		ACE7023
	C13, C14 (2200/100)		ACH7140
	C19, C20		CCCSL470K2H
	C42-C45		CEAT100M50
	C224, C31, C32, C51		CEAT101M16
	C101		CEAT101M25
	C61		CEAT1R0M50
	C33, C34		CEAT221M16
	C36		CEAT330M16
	C39		CEAT470M16
	C63		CEATR10M50
	C22		CEHAT1R0M50
	C62		CEHAT2R2M50
	C21		CEHAT470M50
	C53, C54		CKCYB102K2H
	C23		CKSQYB103K50
	C64		CKSQYB223K50
	C41		CKSQYB472K50
	C25-C27, C46		CKSQYB473K50

RESISTORS

Mark	No.	Description	Part No.
	R67		RD1/4PU223J
⚠	R26		RS1/10S101J
⚠	R57, R58		RS1/10S221J
	VR41 (4.7K)		VCP1154
	Other Resistors		RS1/10S###J

OTHERS

Mark	No.	Description	Part No.
	CN201	4P CONNECTOR	52147-0410
	J11	CABLE ASSY 2P	ADX7356
⚠	IC11, IC12	PROTECTOR(3A)	AEK7015
⚠	IC21	PROTECTOR(5A)	AEK7019
	H1, H2	FUSE CLIPE	AKR7001
⚠		TERMINAL	RKC-061
		PCB BINDER	VEF1040

B OPERATION ASSY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC201, IC203		NJM2904M
	D201		AEL7014
	D202		MTZJ6.2B

CAPACITORS

Mark	No.	Description	Part No.
	C214		CCSQCH330J50
	C201		CEAT100M50
	C211-C213		CEAT101M16
	C209		CFTLA154J50

Mark No.	Description	Part No.
C228		CKSQYB473K50
C205		CKSQYB682K50
C210, C227		CQMBA473J50

RESISTORS

VR201 (50K)	ACS7033
Other Resistors	RS1/10S###J

OTHERS

4P CABLE HOLDER	51048-0400
J201 JUMPER WIRE	D20PYY0425E
JA201 1P JACK	VKB1077

6. ADJUSTMENT

ATTENTION

- Don' t make speaker terminal short circuit during the power supply injection.
- Since the PRIMARY part of the AMP ASSY is not insulated, be careful of electric shock.
- Be sure to disconnect the power supply cord before touching the AMP ASSY board.
- Discharge the C13, C14 capacitors!

6.1 MEASURING INSTRUMENTS

- Provide yourself with the following measuring devices:

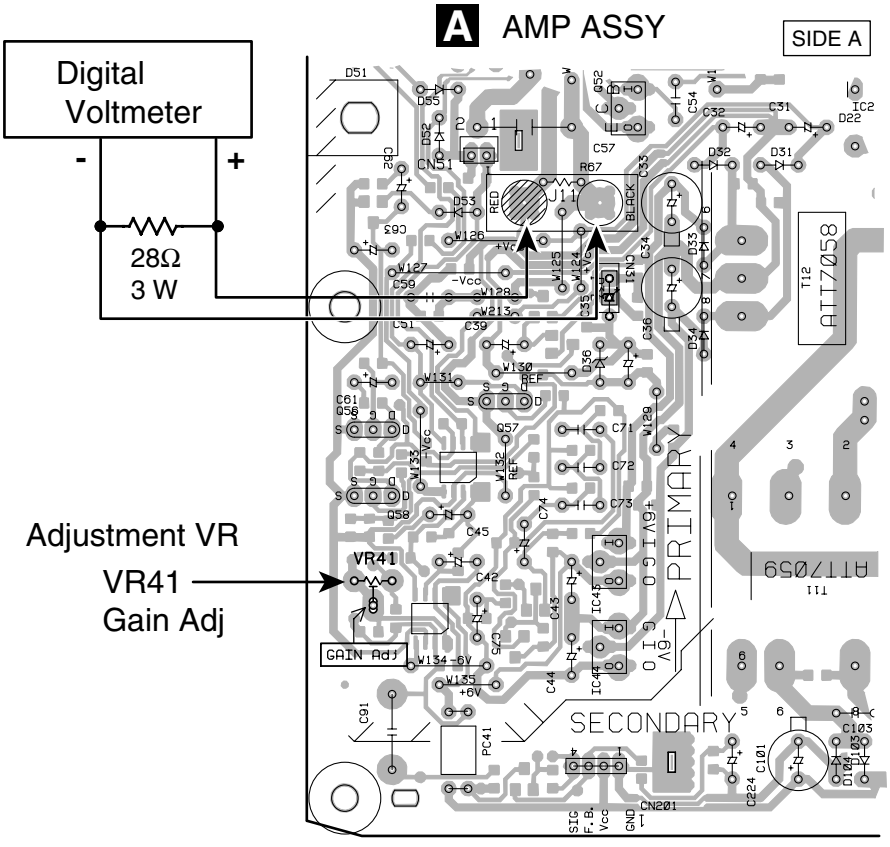
(1) Digital voltmeter
(2) Oscilloscope
(3) Attenuator
(4) Low-frequency oscillator

■ GAIN Adjustment

(1) Decrease the level of the Adjustment Variable resistors (VR) for the channel to adjusted.
(2) Increase LEVEL VOLUME maximum.
(3) Adjust GAIN (VR41) volume.

- Apply the signal to the Line IN of JA201.
- As the gain from IN to SPEAKER OUT 53dB(freq. = 50 Hz), input of 10mVrms to Input results in output of 0.72 W (4.5Vrms/28 W) at SPEAKER OUT
- After power-supply ON, after waiting abut 10 seconds, it adjustment because, wave form rises behind time for slow start operation.

■ Test Point



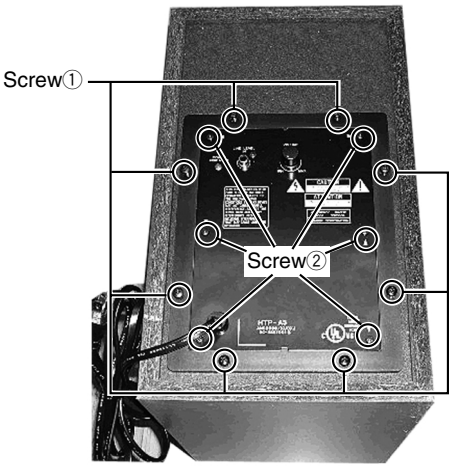
7. GENERAL INFORMATION
7.1 DISASSEMBLY

1. SUBWOOFER

● POWER AMP SECTION

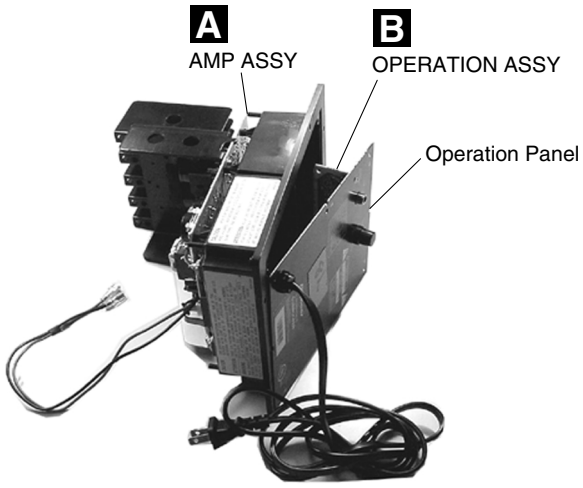
■ Removing the AMP SECTION

Remove the 8 screws ① from the power amplifier.
Remove the connector lead, etc.



■ Removing the Operation Panel

Remove the 6 screws ② from the power amplifier.
Loosen the power lead.



● FRONT PANEL

The front panel is attached to the cabinet by its bosses applied with adhesive.
To detach it, pry it open by inserting a flat blade screwdriver into bottom slot between the cabinet and front panel.

● SPEAKER

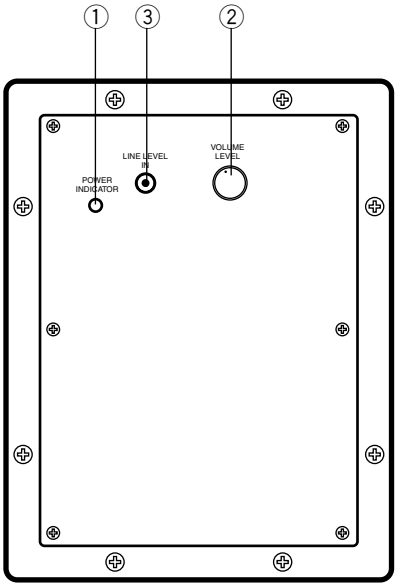
To detach first remove the front panel, then remove the 4 external screws.

2. SATELLITE

● Satellite Speakers are provided as assembly units.

8. PANEL FACILITIES

SUBWOOFER REAR SECTION



If the output of the receiver connected to this unit is high or if the output has a low range boosted by the Bass control, Bass boost, or other means, there may be some sound distortion even if the level of the unit is lowered. In this case, lower the output level (Volume, Bass control, Bass boost) on the receiver side.

① POWER indicator

Illuminates **RED** when the power is being supplied.

② Volume LEVEL

Volume of subwoofer is adjusted with this knob. Turn this knob clockwise to raise the level.

- Starting with “MIN“, turn this knob and raise the volume slowly. If the unit is turned on with the volume set too high, it could cause hearing and/or speaker damage. Do not turn the volume up excessively high. The low frequency sound is apt to be raised too high since it is less disturbing and harder to detect than high frequencies. Caution must be taken here since the amplifier and speaker will be clipped when the output of the amplifier or receiver is increased with the subwoofer level set to "MAX".

③ LINE LEVEL IN

Connect SUBWOOFER OUTPUT terminal of the receiver to this terminal with the supplied RCA cable.